laws in states where they do not now exist.

16. Abolition of night work by women and minors.

17. Equal pay for equal work regardless of sex.

18. More conferences and better understanding established among employers, workers and physicians.

19. Inauguration of community forums where health conditions can be openly discussed by parents and physicians.

20. Elimination of Latin and substitution of English in prescriptions. This mystifying practice is un-American and does not help practioner or patient.

21. Continuous medical and dental inspection in all public schools at public expense.

22. Complete systems of up to date physical education in all public schools at public expense, with further provision for free examination of adults by medical faculty of schools.

23. Concentration of all Federal health agencies into one department with a secretary at its head, he to be a member of the President's Cabinet.

SANITATION OF THE EXPLOSIVES INDUSTRY.

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THERE are so many things about the explosives industry, viewed from the standpoint of industrial medicine and hygiene, which are exactly like any other industry that I will devote myself chiefly to the points of difference; since others will handle the general industrial problem.

When we speak of the explosives industry as a war problem, it should be borne in mind that it is only its expansion which can be so-called. And even this expansion was accomplished in a large measure solely through private enterprise, during the three years before we entered the war ourselves. Many do not seem aware that all of the explosives which are now being produced in such enormous quantities were on the market before 1914, and the industrial disease hazard in making them was recognized by experienced manufacturers. Yet when hundreds of new factories sprang into existence, the (to them) new forms of poisoning were regarded as something wonderful and mysterious, and became the subject of much publicity. Such publicity has done a great deal of good, no doubt; but it all comes back in the last analysis to the obvious fundamentals long recognized by the older and more experienced manufacturers; that in order to keep from getting poisoned by a poisonous substance, you must not swallow it, nor absorb it through your skin, nor inhale it into your air passages. The precautions which are now so generally promulgated are simply details directed toward accomplishing these fundamentals. The DuPont Company goes about it, when designing a new plant, by getting together the safety, medical, engineering and operating departments in an effort to devise means whereby the apparatus may be so constructed and operated that poisonous dusts and fumes will not escape into the workrooms, and the processes carried on without any of the material having to be touched by the workers. It is only in the measure that

it is impossible to accomplish this ideal that special ventilation and other precautionary measures must be relied upon to supplement such rational design.

There is good reason to believe that many of the newer manufacturers had little notion of the poisonous nature of the various materials used and produced in the explosives industry until the matter was forced upon their attention by bitter personal experience. Then they began to write for information to the concerns with more experience, which was of course cheerfully furnished; but the inquiries became so frequent that I finally wrote up the whole list of "Explosives Industry Poisons," and published it in the *New York Medical Record*, January 20, 1917. Nevertheless it is strange that there should have been such lack of knowledge upon the subject, even in the beginning; for our first American text book on occupational diseases (Dr. W. G. Thompson) appeared in 1914, and this book mentions many of them—TNT being described under "Triton," as it was then known.

There certainly can be no excuse for lack of such knowledge now, for since my own contribution the medical journals and various government publications all through 1917 and 1918 have fairly bristled with it. Notable contributors have been Dr. Alice Hamilton, Dr. Schereschewsky, and a number of others to whom I would like to give credit, whose names I cannot for the moment recall. But probably no other contribution so well crystalizes all of this information into shape available for practical use as the work done by Dr. Evans and his subcommittee on the Advisory Board, Council of National Defense, which was published as "Welfare Work Series No. 2."

Aside from its industrial poisonings, the chief features which distinguish the explosives industry from other industries are the ever-present possibility of an explosion, and, as a result of this possibility, the selection of isolated localities for building the plants. We all know the difficulties which have attended war expansion of ordinary industries due to the housing and other problems, which quickly become acute with the influx of thousands of new workers. If they constitute a problem in ordinary industries which need no isolation, imagine what this must be when isolated factories must be built, often in sections that have been avoided by others for good and sufficient reasons. To make these places habitable and healthy in the first place, and then to make them really attractive places to live in by instituting all those various activities which have been collectively designated as "welfare work," so as to have a contented and permanent works community with slight labor turnover, has been no inconsiderable part of the explosives industry war problem.

Building up a medical and surgical organization to take care of the needs of employees and their families in these widely separated localities has been one element of this work which required much thoughtful study. I often reflect upon how relatively simple a matter it would be to care for the 100,000 or more employees and their families in my own Company if I had them all together in one community—what a magnificent hospital we could have, and how we could install the "group system" of practice, like that at the Mayo Clinic. Instead of that, we now have to divide the medical service up into units of various sizes, some of them caring for only 100 employees, while others have to care for 20,000 to 25,000.

Not the least of the problems of the Medical Department is the maintenance of an adequate personnel. We lost practically all of our younger doctors at

the time of the first draft, and since then a considerable percentage of the middle-aged ones have gone into the military service. Who can blame any physician with a rugged constitution for preferring to serve his country in the glory and excitement of the battle front, with all the prestige and military honors such service gives, rather than in obscure isolation on an explosives plant, even though both forms of service are equally necessary? Nevertheless, the loss of each of these men who leaves us is a distinct handicap; for the new man has to be trained into a number of duties and occupational diseases which he has not met with in ordinary practice, and new men are getting more and more scarce. We are obliged to get our recruits either from those turned down by the army, or from those of more mature years. Of those rejected by the army, many have been so from such causes as apply equally to our service; but some of them we are fortunately able to use. Of the older men, many have families to support and expenses to meet for which our rate of compensation is not adequate, and I have not yet succeeded in getting it placed high enough to tempt many of them. Besides this, they are often looking after not only their own practice, but the patients of one or more brother physicians who are in the service as well, turning over a good proportion of the earnings from their colleagues' practice to the latter's families. For these reasons, our force of physicians is often inadequate, and when we have an epidemic like the present influenza outbreak we are surely in trouble. I have, as you may well imagine, a warm spot in my heart for those physicians who have stuck by us. They are doing their bit, for I do not believe there is a single one of them but could better his financial income by going into private practice within a short distance of his present location.

The woman worker is becoming more and more in evidence in the explosives industry as she is in others, and might by some be regarded as one of the "problems." To me, however, she seems far more like the most welcome solution of a problem. As regards the medical department, we simply take care of her by adding the necessary number of women physicians to the staff, and we try to treat her as we would like our sisters and daughters treated if they were left behind while we were on the firing line "over there."

These women employees are certainly a success. All they seem to expect is that they be given the same treatment as men, and they make loyal, plucky and conscientious workers. A little judgment is needed, however, in assigning them to work which at least approaches the capabilities of women; if this is exercised they frequently do far better than men have done at the same work.

There really does not seem much more to add to my part of the discussion, for you are all far better acquainted with the explosives industry than you were a few years ago. It is a welcome change from the days when, if I mentioned my medical department, I was immediately asked "what I needed doctors for—a staff of undertakers would seem to be the appropriate thing." People are coming to realize that we who work in the explosives industry are after all like other human beings—we have our sorrows and joys, our sicknesses and minor injuries, just like other people; and that while sometimes a disaster may come to rob us of father, brother, sister or friend, it is not the explosion risk which is the chief reason for maintaining a medical department on a powder plant.